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ABSTRACT

A study was conducted: (1) to determine the proportion of average 6th-grade students who, when given prompts, could produce an incipient form of dialectical reasoning; and (2) to test a unit of instruction developed to teach dialectical reasoning as an appropriate learning strategy for exploring public controversies. It was hypothesized that if dialectical reasoning were taught directly as a goal-specific strategy, the quality of instructed students' essays would exceed the quality of essays by non-instructed control students assisted by prompts. Participants were 45 middle-school students. The experimental curriculum contained six lessons distributed during social studies classes. Control subjects read and wrote mystery stories. Subjects were told to compose paragraphs stating their position, giving reasons for the position, giving reasons supporting the opposite position, and coming to a conclusion. Content analysis techniques were used to score the essays. Findings indicated that with minimal scaffolding on the assessment, most 6th-grade students could produce dialectical reasoning on a novel controversy about which they had some general knowledge. Minimal scaffolding at time of assessment had as much impact on production of dialectical reasoning as did explicit instruction designed according to principles generated by recent strategy instruction research. (RH)

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TEACHING AND PROMPTING CRITICAL THINKING ON PUBLIC CONTROVERSIES

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TEACHING AND PROMPTING CRITICAL THINKING ON PUBLIC CONTROVERSIES

ABSTRACT

This study raises the distinction between instruction and procedural facilitation (scaffolding) as a means for helping students to think critically on public controversies. Two groups of sixth-grade students were asked to write a critical essay on a given public controversy. Students in one group had been engaged in an experimental curriculum unit designed to teach them the concepts, use, and benefits of a form of critical thinking, dialectical reasoning. Students in the other group received no prior instruction but were assisted at the time of writing the essay to do their best. The groups performed nearly equally. This suggests that many sixth-grade students already know how to reason dialectically and await environments, not enabling instruction, that challenge them to use this ability.

INTRODUCTION

Teaching students to reason well on the public's problems is not a new concern for social studies educators. One review (Parker, in press) found three eras of inquiry on the matter: The first included experimental curricula designed to increase student ability to resist propaganda (e.g., Arnold, 1938; Bateman & Remmers, 1936). In the second (Oliver & Shaver, 1966; Newmann & Oliver, 1970), traditional American history courses were compared to experimental courses that emphasized discussion and

analysis of public controversies. The third seeks to compare reasoning on public controversies to reasoning on less messy problems like those found in mathematics (e.g., Parker, Mueller, & Wendling, 1989; Voss, Greene, Post, & Penner, 1983).

In each era investigators have had to grapple with the unique terrain of the public policy domain and the sorts of reasoning that might be suited to it. Arnold (1938) suggested that policy-making required citizens who could make use of a wide selection of data by determining relevance, dependability, bias, and adequacy of data. He did not consider, among other things, the necessity of analyzing value conflicts. Studies in the second era considered more comprehensively than any before or since the role of value commitments and conflicts in social studies education. In so doing, these investigators broke with the almost exclusive concern for logical fallacy that had dominated the propaganda-resistance era and thereby forshadowed subsequent distinctions between formal and informal reasoning and between neat and messy problems.

These distinctions were prominent in a third-era study by Parker, Mueller, & Wendling (1989). They began by contrasting public policy issues with problems of formal logic. In the latter, sufficient information is at hand, premises are given and fixed, inferences are reliable, and value conflicts are not present or, if present, irrelevant to solving the problem. In the former, relevant information is not only missing, but reasonable people will disagree on what constitutes relevant information. Moreover, premises are not given, let alone fixed;

inferences are not reliable; and conflicting values, lines of reasoning, and strategies for arriving at a decision can be brought to bear. In short, policy issues are ill-structured and multilogical; in a word, they are controversial. Reasoning on such issues is not problem solving so much as it is model building: Premises, inferences, and positions must be constructed and supported as the reasoner goes along. And at the heart of this construction project is dialectical reasoning--the exploration of competing frames of reference, lines of reasoning, and positions.

To appreciate the claim that dialectical reasoning is central to model building on public controversies, it should be helpful to consider Mills' (1962) distinction among three kinds of reasoning: vulgar, sophisticated, and critical (see also Paul, 1987). When we reason in a vulgar way, our concern is to defend a position, and our means generally lack skill. Like Archie Bunker's, our logical fallacies are readily apparent and our perspective constrained by a narrow set of reference points. When we reason in a sophisticated way, our concern is the same--to defend our position--but our means have become skillful. Reflection on the means we use is now paramount since we want to argue without breaking the rules of argument. Nonetheless, reflection on our goal (to defend our position and win the argument) is, as in vulgar reasoning, generally absent.

When we reason in a critical way, the goal changes from defending and winning to genuinely exploring the issue. This is an epistemological shift from tackling an issue by seizing and shoring up a position, which is false inquiry, to tackling an

issue by building an understanding of it, which is genuine inquiry (see Gadamer, 1985). This is a different interest and calls for a different sort of strategy. It entails what Perkins, Allen, and Hafner (1983) characterized as an effort "to interrogate one's knowledge base in order to construct arguments pro and con" (p. 186). Sophists might interrogate their position, but the intent nonetheless is to shore it up; critical reasoners, on the other hand, have a commitment not so much to their position per se as to the evolution of the position toward some standard of truth and goodness. This evolution proceeds through a dialectical process of exploring competing positions, including one's own, and the reasoning behind positions. Paul (1987) describes the process as a continuously "fuller and richer consideration of the available evidence and reasoning through exposure to the best thinking in alternative points of view" (p. 138).

Dialectical reasoning on public controversies is hard to find in both children and adults. Except in the practice of scientific inquiry, where consideration of competing explanations is standard fare, models of dialectical reasoning are scarce. Consider how rarely they appear in two places where models might reasonably be expected: in political forums and in social studies curriculum and instruction. Political leaders normally are models of vulgar or sophisticated reasoning, defending their positions more or less artfully and attacking alternatives. Elementary and secondary school history textbooks, though dealing with subjects brimming with controversy, are known generally to

provide poor explanations, usually of just one side's reasoning (e.g., the Federalist position on the proposed constitution), and often not even attempting to compare it to the other side's case (e.g., Patrick Henry's reasons for opposing it) (Anyon, 1979; Beck & McKeown, 1988). And, social studies teachers have earned no better reputation for providing models of dialectical reasoning on public issues (Armento, 1986; Shaver, Davis, & Helburn, 1979). Given school children's ample exposure to monological, well-structured representations of multilogical, ill-structured material, they cannot reasonably be expected to produce it themselves. Furthermore, even if they were exposed to positive examples of dialectical reasoning, developmental limitations (egocentricity) predictably would constrain their production of it.

In spite of the dearth of models on the one hand and developmental limitations on the other, Parker et al. (1989) explored the possibility that the scarcity of dialectical reasoning was more a production deficiency than an inability. A production deficiency is a learner's failure to use an appropriate learning strategy that he or she is capable of using (Belmont & Butterfield, 1977; Flavell, 1979). This distinction between ability and usage is an important one. When failure to reason dialectically on a public controversy is viewed as an inability, instruction is the logical remedy; when viewed as a production deficiency, however, assistance makes more sense. This assistance is a kind of guidance that is provided at the metacognitive or executive level of reasoning. Known also as procedural facilitation (Bereiter & Scardamalia, in press) and

scaffolding (Palinscar & Brown, 1984), it consists mainly of well-placed prompts that encourage students to use knowledge and skills they already possess (if only in incipient form) to perform better than they would without such prompts.

Accordingly, Parker et al. (1989) prompted 24 eleventh-grade students to write, without prior instruction, a dialectical essay on one of two given public controversies. They were told to compose four paragraphs: In the first, students were directed to present the facts of the issue; in the second, the writer's position and supporting argument; in the third, a counterargument; in the fourth, a conclusion. All but two students produced dialectical reasoning. Admittedly, the form was incipient; nonetheless, 92% stated a position and argued both for and against it.

OBJECTIVES

The present study involved younger students. Like the 11th-grade study, it had a descriptive objective: to examine these students' production of dialectical reasoning. Specifically, we wanted to know the proportion of average sixth-grade middle school students who could produce an incipient form of dialectical reasoning given essentially the same prompts that were used with high school students in the previous study. This study had an experimental objective as well: to design and test a unit of instruction developed to teach dialectical reasoning to these students as an appropriate learning strategy for exploring public controversies. If dialectical reasoning were taught directly as a goal-specific strategy, we hypothesized, the

quality of the instructed students' essays should exceed the quality of essays written by students who only were assisted.

METHOD

Subjects

Participants were 45 students in a suburban, public middle school in the Pacific Northwest. All were in grade 2; 22 students were female, 23 were male; 9 were minority (8 Asians and 1 Black). These figures correspond to the school district's population. At the beginning of the school year, students were randomly assigned to social studies classes. Two classes taught by a single teacher comprised the experimental (N = 24) and control (N = 21) groups for this study.

Data Collection

Data were notes and memoranda from planning meetings; the teacher's daily lesson plans; classroom field notes taken during the experimental curriculum unit; and essays (the dependent measure) composed by students following the experimental unit.

The production of dialectical reasoning was assessed by a four-paragraph essay measure devised by the researchers. This measure was virtually identical to the instrument administered in the earlier study with high school students (Parker et al., 1989); the language, however, was modified for younger students. Students were directed to write on a current issue at their school: Should (the students' own) Middle School continue to have a detention ("hold") room? The following instructions were presented to the students in written and oral form:

You are to write a four-paragraph essay on this issue. Each paragraph has a different purpose:

Paragraph #1: In this paragraph, you should tell your reader that you are going to write an essay on this issue. Then tell your reader your position on this issue, but don't give any reasons yet.

Paragraph #2: In this paragraph, you should give your reasons for your position. In other words, give good arguments that support your position on the issue.

Paragraph #3: In this paragraph, you should give good reasons against your position. In other words, give good arguments that support the opposing position on the issue.

Paragraph #4: In this paragraph, you should come to a conclusion. Now that you have thought about the reasons for and against your position, what is your position now?

Use the attached paper to write the essay. Use a separate piece of paper for each paragraph. You do not have to fill up the whole page.

Data Analysis

Content analysis techniques (Holsti, 1969) were used to score the essays. Five categories deduced from the conception of dialectical reasoning outlined above were used as the basis for the analysis. Dialectical reasoning was displayed by higher frequencies on each of these categories, but essentially by the

presence of both supporting and counter arguments:

Supporting arguments: The writer argues multiple distinct lines of support for his or her position on the issue.

Counterarguments: The writer argues multiple distinct lines of argument against his or her position on the issue.

Empathic counterargument: The counterargument is empathic; the writer presents the counterargument fairly and convincingly, without apparent bias in the direction of the favored position.

Relevant counterargument: The counterargument is relevant; the writer argues in direct rebuttal to his or her own supporting argument.

Dialectical conclusion: The conclusion is dialectical in nature; it contains a recognition of the opposing position. At the least, this is in the form of mentioning that counterarguments exist. At the most, the supporting and opposing arguments are synthesized, with the writer potentially changing sides from the initial position taken.

Procedure

The experimental group. The experimental curriculum was developed collaboratively with the classroom teacher. It contained six lessons distributed over eight social studies class sessions, each 55 minutes in length, which in turn were distributed over a three-week period. The lessons were designed to teach dialectical reasoning not as a skill but as a strategy--a method of grappling with public controversies that arise in the social studies curriculum as well as in school and community

life. Strategy was defined as follows:

> Strategies are processes (or sequences of processes) that, when matched to the requirements of tasks, facilitate performance. (Pressley, Goodchild, Fleet, Zajchowski, Evans, in press)

In order to teach dialectical reasoning as a strategy, the lessons featured instruction on the concepts and techniques of dialectical reasoning and as well as on the goal-related benefits of using dialectical reasoning. Benefits instruction is important because it encourages metacognitive knowledge of a skill, which in turn permits a degree of control over its use (Pressley, Snyder, Cariglia-Bull, 1987).

The experimental curriculum consisted of explicit instruction on dialectical reasoning, guided practice, independent practice, revision, and metacognitive instruction on the relative benefits of use. Students were led through a series of "involve and debrief" lessons: They were engaged in an activity that elicited dialectical reasoning and then were asked to reflect metacognitively on the activity. As the ensuing discussion progressed, explicit instruction on the concepts, techniques, and benefits was provided. The six lessons are sketched here:

> 1. The teacher used requests previously written by students to their parents to illustrate how counterarguments could be incorporated into such requests. She introduced the concept, dialectical reasoning, by calling it "both sides reasoning, or looking at two sides of an argument." She

explained it and contrasted it to "myside" reasoning. She likened dialectical reasoning to playing with puppets, where "in your same body you could argue both sides." Then, she drew two columns on the blackboard and asked students to contribute the supporting and opposing arguments for the item they had requested from their parents. Then the students revised their requests in order to include counterarguments. For example, a student who had requested a new bicycle supported his request by arguing that he would get more exercise with the bicycle, but he counterargued that the bicycle was an expensive item. These revisions were shared, and the activity was debriefed by discussing the benefits of reasoning on both sides, compared to reasoning on only one side, of the issue.

2. The students wrote another request to their parents, asking permission to go to the shopping mall on the weekend. The request included both supporting arguments and counterarguments. The students shared and revised these requests. The activity was debriefed by having students recall the comparative benefits of dialectical reasoning.

3. The students wrote a four-paragraph request to their parents on a subject of their choosing. The first paragraph was to be an introduction, the second was for supporting arguments, the third was for counterarguments, and the fourth was to be a conclusion. They shared and revised these requests.

4. The teacher transferred the use of dialectical reasoning to a school-related issue. Students brainstormed school

issues on which dialectical reasoning could be used. Each student wrote a four-paragraph, dialectical essay on the issue of the advisability of having a soda pop machine in the school. They shared and revised these essays and discussed the importance of generating empathic counterarguments.

5. The teacher provided direct instruction on the classification of statements as monological or multilogical. She then provided guided and independent practice on distinguishing between monological and multilogical statements on the soda pop machine issue. Students shared their decisions and discussed how the classifying was done.

6. Students each wrote and then discussed a paragraph on the topic: Is dialectical reasoning a skill you can use?

The Control Group. Meanwhile, the control group proceeded with the regular curriculum--reading and writing mystery stories. On the day when the experimental curriculum was completed, the control group read and discussed a one-page explanation of dialectical reasoning and the benefits of its use (duration: 10 minutes). The purpose was to introduce to the control group the vocabulary used in the upcoming writing task. The teacher presented this reading as a preview to the students' next curriculum unit. (The control group studied the experimental curriculum after the present study was complete, and the experimental group studied what had been the control group's curriculum.)

The four-paragraph essay was administered to both groups the following day. The students were allowed 55 minutes. All were completed within 45 minutes.

FINDINGS

Nearly all of the sixth graders (88% of the experimental group and 95% of the control group) wrote dialectical essays. (See sample essays in appendices A and B.) That is, they argued both for and against their positions on the issue (see Table 1). Students in the experimental group typically gave more than two supporting arguments while their counterparts in the control group gave one or two. Students in each group typically offered just one line of counterargument; and about half of each group wrote empathic counterarguments, relevant counterarguments, and dialectical conclusions.

For the five categories of interest--supporting arguments, counterarguments, empathic counterargument, relevant counterargument, and dialectical conclusion--an analysis of covariance was conducted to examine differences between the two groups (see Table 2). Scores on the school district's composition test were used as the covariate in order to control for differences in writing ability. A statistically significant difference ($p < .05$) was found for the first category only, supporting arguments. The effect size was .74.

DISCUSSION

These findings suggest that sixth grade students are in fact capable of dialectical reasoning. That there was only one

significant difference between the experimental and control groups is scant cause for disappointment, for what we have been able to demonstrate is that with appropriate support (some minimal scaffolding on the assessment) most sixth-grade students can produce dialectical reasoning on a novel controversy about which they have some general knowledge. Moreover, we have demonstrated that minimal scaffolding at the time of the assessment has as much impact on the production of dialectical reasoning as explicit instruction designed according to principles generated by recent strategy instruction research.

The term scaffolded instruction has been used extensively to refer to the instructional support that is needed to complete a task successfully (Applebee & Langer, 1983; Bruner, 1978; Cazden, 1980; Palinscar & Brown, 1984; Vygotsky, 1962). More recently this principle has been applied to assessment, resulting in the concept of dynamic or scaffolded assessment (Budoff, 1974; Campione & Brown, 1985; Carlson & Weidl, 1979; Feuerstein, 1979.) Simply put, dynamic assessment provides some form of help to students so as to allow them to demonstrate their skills or their ability to acquire new skills--their potential to learn. In prior studies, this assistance has been provided in a variety of ways: modifying the format of the test; providing direct instruction in methods of problem solving; directly assessing a set of processes; or providing a series of guided hints to produce new learning. These studies indicated that dynamic assessment generally is a more sensitive measure of students' abilities and a better predictor of future learning than a static, more traditional measure.

The assessment strategy in the present study provided scaffolding in two ways: in the definition of dialectical reasoning and in the mode of production. Therefore, we minimized the possibility that lack of declarative knowledge of the term or inability to write a reasonably coherent, well-organized essay was a confounding factor in producing the required reasoning. If we may drawn on Armbruster and Anderson (1981), we created a "considerate" test.

While we know that students in both groups were able to reason dialectically, albeit in novice form, we still have little understanding of why the experimental group did not outperform the control group. We find two explanations cogent: First, it is quite possible that our measure, while high on considerateness, was low on sensitivity to differences between groups that fell outside the five categories. A holistic scoring technique (Braungart-Bloom, 1986; Charney, 1984) may have captured more and would have been useful in other statistical analyses (e.g., an analysis of covariance with IQ or writing ability scores).

Second, moving from weaknesses of the dependent measure to weaknesses of the treatment, we noted in classroom observations of the experimental group a tendency to construe dialectical reasoning as beneficial not because it enables one to engage in genuine reasoning--in this case, to explore all sides of policy controversy--but because it helps one put together a more winning set of supporting arguments. In other words, vulgar reasoning may have given way only to its first cousin, sophistication. To

illustrate, the instructor of the experimental curriculum often asked students why it was helpful to consider opposing positions and reasoning on an issue. Typical replies were, "You can have an answer back for everything they say" and, "You can work around their reasons." During these discussions, the teacher accepted these answers and did not press students to consider dialectical reasoning as a strategy for exploring an issue in pursuit of the best possible policy rather than for winning an argument and getting one's way. Recall, too, that the first lesson introduced dialectical reasoning to students in the context of satisfying personal wants. We wondered if the teacher herself appreciated the more critical understanding of dialectical reasoning.

This gap between curriculum developers' intentions and teachers' daily practice raises the issue of teachers' mediation of curriculum plans (Parker, 1987). New curriculum ideas are modified fundamentally when teachers take ownership of them and begin to integrate them into their daily classroom work (Parker & McDaniel, 1988). The design of the experimental curriculum in the present study was an intensely collaborative effort between ourselves and the teacher. From her we learned and incorporated, for example, the involve-then-debrief routine for each lesson in the treatment. Without her practical wisdom on this matter, we most likely would have implemented the more conventional instruct-then-practice routine. At the same time, we were disappointed when the teacher did not emphasize the less egocentric benefits of strategy use.

CONCLUSION

The experimental curriculum was designed to teach dialectical reasoning as a strategy, that is, as a skill that can be employed strategically in relation to goals and task requirements. Our dependent measure facilitated the production of such reasoning and, contrary to our hypothesis, overcame the effects, if any, of the treatment. The primary implication for subsequent studies is the need to distinguish between instruction and procedural facilitation. It is very likely the case that students are capable of producing much better reasoning on social studies topics than their lessons presently require, and that procedural facilitation is all that is needed. In other words, the mindlessness that traditionally attends social studies lessons is perhaps more a function of poor content selection and lesson design practices than student inability to reason better. If content is selected and lessons are designed in such a way that students are challenged and helped to construct and interrogate positions on public controversies--whether the decision colonists faced about separating from England, the decision later to integrate public schools, or present decision-making on drug abuse--this may well do more to increase mature reasoning and thoughtful learning in social studies than the direct instruction on thinking skills that is widely promoted today. To put the matter simply, students appear to be ready for lessons that challenge them to reason as well as they already can.

Simply knowing that students can reason dialectically in an environment that invites and supports it does not indicate that

students will choose to use this strategy "spontaneously" in unprompted situations (Borkowski, Carr, & Pressley, 1987). It may be that these students would have been able to produce such reasoning without scaffolded instructions, or that the instructed students can now employ dialectical reasoning in other situations. We did not have a measure transfer, however, nor did we examine unaided production, both of which may have been fostered by the experimental curriculum. A study incorporating these issues is warranted based on the finding here that dialectical reasoning generally is available to sixth graders with only minimal assistance.

Of course, there are students who are unable to reason dialectically on public controversies, even with assistance. For them, instruction should be helpful. Instruction like that provided in this study--instruction emphasizing strategic, rather than blind, skill use--should be the most helpful. Yet, while this has been verified in other domains, it remains a hypothesis in the domain of public controversies.

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APPENDIX A
SAMPLE DIALECTICAL ESSAY (EXPERIMENTAL GROUP STUDENT)

Paragraph 1

I'm going to write an essay on, Should xxxx Middle School continue to have a HOLD room? Kids are wondering what the decision will be. Most kids want to say, "goodbye" to the HOLD room, but some want it to stay.

Paragraph 2

I don't think xxxx should have a HOLD room, because sometimes kids have to do something important so that they can't go, and if this person has important things all week, they end up with Saturday School. HOLD is also boring because all you do is sit around and nobody ever thinks of why they're in there or what they did wrong.

Paragraph 3

I think that HOLD should go on because if the kids don't go to HOLD, they'll just do it again because they weren't punished enough. HOLD gives them a chance to think about what they did.

Paragraph 4

Now that I have argued for and against my position, I still think that I want it to end and to continue. I'm undecided.

APPENDIX B
SAMPLE NON-DIALECTICAL ESSAY (EXPERIMENTAL GROUP STUDENT)

Paragraph 1

I think xxxx should not have a HOLD room.

Paragraph 2

I don't think so because it is not necessary. It isn't necessary because it's mostly the same people in the HOLD room. It also wasted some teachers' time because they have to stay in the room half an hour every day. No other school has it, so why should xxxx?

Paragraph 3

Instead of giving people who are bad HOLDs, you should either call their parents or write a note to them. Then they could punish the kid themselves. Even though I've never gotten a HOLD, I came close to getting about five of them.

Paragraph 4

So as I was saying, xxxx should not have HOLD room any more because it's a waste of time and some parents don't want their kid to stay in the HOLD room on certain days. I think everybody doesn't like the teacher that invented HOLD.

Table 1

Categories in Dialectical Reasoning

	Experimental	Control	Experimental	Control
Number of arguments:	Mean:		Standard deviation:	
Supporting	2.29 (n = 24)	1.52 (n = 21)	1.16	1.03
Counter	1.21 (n = 24)	1.29 (n = 21)	0.78	0.78
Essays displaying:	Proportion:		Standard deviation:	
Empathic Counterargument	0.52 (n = 21)	0.70 (n = 20)	0.51	0.47
Relevant Counterargument	0.48 (n = 21)	0.20 (n = 20)	0.51	0.41
Dialectical Conclusion	0.63 (n = 24)	0.52 (n = 21)	0.50	0.51

Table 2

Summary ANCOVA Statistics for Categories in Dialectical Reasoning

	SS	df	MS	F	p
Supporting Arguments	7.702	1	7.702	6.615	<.05
Counterarguments	0.039	1	0.039	0.059	ns
Empathic Counterargument	0.453	1	0.453	1.787	ns
Relevant Counterargument	0.449	1	0.449	1.972	ns
Dialectical Conclusion	0.161	1	0.161	0.629	ns